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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/682,576	10/08/2003	Wonjoo Suh	STAN.078US1	8497

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EXAMINER	
KALIVODA, CHRISTOPHER M	

ART UNIT	PAPER NUMBER
2883	

DATE MAILED: 10/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	**Application No.** 10/682,576	**Applicant(s)** SUH ET AL.	
	Examiner Christopher M. Kalivoda	**Art Unit** 2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Response to Restriction received 08/3/05*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) *5-22 and 24-34* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 August 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/26/04 and 2/2/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Species A, claims 1-13 and 23 in the reply filed on August 3, 2005 is acknowledged. However, it is noted that claims 5-13 were inadvertently included in Species A and should have been included in Species B. Accordingly, claims 5-13 are also withdrawn from consideration.

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because: It does not identify the citizenship of each inventor. Please see M.F. Yanik.

Specification

The disclosure is objected to because of the following informalities: On page 7 of the specification, 4 lines from the bottom, the journal information (18,162, 2001) appears to be incorrect. The reference should be (20, 3, 2003). Please see enclosed reference. If this is incorrect, then Examiner respectfully requests a copy of the document with the 2001 date showing the full date if known.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hobbs et al., U.S. Patent 6,870,624.

Regarding independent claim 1, Hobbs et al. teach a photonic device (col 2, lines 16-19) comprising: a medium of dielectric material (col 3, lines 30-35) with a substantially periodic one or two dimensionally (col 2, lines 12-16 and Fig 2) periodic index contrast introduced into the dielectric material so that said medium has at least one resonant mode at a resonance frequency (col 2, lines 8-10), so that the index of the medium varies periodically along at least one direction (Fig 2), and so that electromagnetic radiation (Fig 1B, ref sign 72) incident upon the medium is substantially completely reflected over a range of frequencies, said range being greater than about 1% of the resonance frequency (Fig 6);

and a device (implied since light is incident as described above) directing electromagnetic radiation towards the medium along a path that is not along or parallel to said at least one direction (Fig 1B, since light arrives from top of photonic crystal).

Regarding claim 2, Hobbs et al. teach the limitations of the claim as described above. In addition, the medium has a periodic array of air holes (col 3, lines 30-35).

However, the reference is silent with respect to the holes having diameters of at least 0.2 a, where a is the period of the array.

Hobbs et al. does teach the parameter of the photonic crystal can be varied depending on the application to include diameter (col 9, lines 27-31) so the diameter is a result effective variable.

It is not inventive to discover the optimum or workable ranges by routine experimentation (see MPEP 2144.04; In re Aller, 220 F2.d 454, 456, 105 USPQ 233, 235).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have holes with a diameter of at least 0.2 a, where a is the period of the array.

The motivation for these hole sizes is to filter various wavelengths (col 3, lines 30-35).

Regarding claim 3, the direction is along a lattice translation vector of the medium since the light can be incident normally (col 6, lines 21-26).

Regarding claim 4, the index contrast of the medium varies periodically along two directions (col 2, lines 12-16 and Fig 2) , and said path is not along or parallel to the two directions (since the light is incident normally as described above).

Regarding independent claim 23, Hobbs et al. teach a method for designing a photonic reflector or filter comprising: providing a dielectric material (col 3, lines 30-35);

and causing a substantially periodic one or two dimensionally (col 2, lines 12-16 and Fig 2) periodic index contrast to be introduced into the material by introducing into the material a periodic array of air holes (col 3, lines 30-35), so that the material has a scattering strength thereby causing it to be substantially completely reflective over a range of frequencies (Fig 6); selecting a dimension (col 9, lines 27-31) related to said index contrast that is introduced so that the material has a scattering strength thereby causing it to be substantially completely reflective over a range of frequencies, said range being greater than about 1% of the resonance frequency (Fig 6).

However, the reference is silent with respect to the holes having diameters of at least 0.2 a, where a is the period of the array.

Hobbs et al. does teach the parameter of the photonic crystal can be varied depending on the application to include diameter (col 9, lines 27-31) so the diameter is a result effective variable.

It is not inventive to discover the optimum or workable ranges by routine experimentation (see MPEP 2144.04; In re Aller, 220 F2.d 454, 456, 105 USPQ 233, 235).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have holes with a diameter of at least 0.2 a, where a is the period of the array.

The motivation for these hole sizes is to filter various wavelengths (col 3, lines 30-35).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 5,574,383 to Erchak et al. teach a photonic device (Fig 2A) comprising: a medium of dielectric material (col 1, lines 51-54) with a substantially periodic one or two dimensionally (col 1, lines 54-58 and abstract, lines 3-5) periodic index contrast introduced into the dielectric material so that said medium has at least one resonant mode at a resonance frequency (col 3, lines 22-29), so that the index of the medium varies periodically along at least one direction, and so that electromagnetic radiation (abstract, lines 6-11).

However, the reference is silent with respect to substantially complete reflection over a range of frequencies, said range being greater than about 1% of the resonance frequency.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Kalivoda whose telephone number is (571) 272-2476. The examiner can normally be reached on Monday - Friday (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Frank G Font

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09/23/05